

COURSE NUMBER: FHWA-NHI-133005A (1.5-Day)
 FHWA-NHI-133005B (2-Day)
 FHWA-NHI-133005C (3-Day)

COURSE TITLE: Highway Capacity and Quality of Flow

The hosting organization is responsible for providing computers with 133 MHz Intel Pentium III or faster processors with Windows 95, NT or better, color monitors, 20 MB of available disk space, and a minimum of 16 MB RAM.
IMPORTANT - Maximum of two participants per computer.

This course provides basic instruction in the use of the 2000 "Highway Capacity Manual" (HCM). Software is employed in most of the capacity analyses performed in the course. Approximately one-half of the course is dedicated to sessions on interrupted flow facilities (i.e., signalized intersections, unsignalized intersections and arterials). The remainder of the course covers freeways, weaving sections, ramps, multilane, and two-lane rural facilities. The course includes lectures describing the procedures for performing capacity analyses on each type of highway facility. Demonstrations and hands-on application of the highway capacity software are used to solve example and workshop problems.

OUTCOMES:

Upon completion of the course, participants will be able to:

- Explain facility characteristics and their limits as used in the HCM 2000 English
- Explain analytical procedures and how to apply them
- Use formulas by inputting data, reviewing and adjusting default values or adjusting factors, as necessary, for project and local conditions
- Determine LOS from results

TARGET AUDIENCE:

State, local, FHWA, contractors, and MPOs who design and analyze intersections, interface with freeways, deal with signal time issues, design and manage operations of urban streets, plan for type of intersections for future needs, work with system(s) monitoring and management of arterial systems; or who conduct operational analysis to determine needs of highway facility, estimate the level of service for new/proposed and existing operations, and manage freeway systems.

FEE: \$235 Per Participant (FHWA-NHI-133005A) Interrupted flow facilities only.

LENGTH: 1.5 Days (CEU: 0.9 Units)

FEE: \$270 Per Participant (FHWA-NHI-133005B) Choose either interrupted flow or uninterrupted flow facilities.

LENGTH: 2.0 Days (CEU: 1.2 Units)

FEE: \$400 Per Participant (FHWA-NHI-133005C)

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bud Cribbs • (703) 235-0526 • bud.cribbs@fhwa.dot.gov

Technical Information: John Halkias • (202) 366-2183 • john.halkias@fhwa.dot.gov



This course can be taught in different course length formats.
 See our Web site for details on each course length.

COURSE NUMBER: FHWA-NHI-133010**COURSE TITLE:** Computerized Traffic Signal Systems

This course presents current technology and control options available for computerized traffic control, including microcomputer applications. The course covers the technical issues of a computerized traffic control system and steps necessary to develop and manage a system using the systems engineering process. These steps begin with establishing system requirements, followed by understanding and combining system elements, evaluating and selecting the system, installation, as well as operation, maintenance and continuing system evaluation.

OUTCOMES:

Upon completion of the course, participants will be able to:

- Discuss and apply the systems engineering process
- Identify procedures for system feasibility and conceptual design
- Identify signal system functional requirements and capabilities
- Identify system components and configurations
- Discuss signal timing and operational strategies
- Identify system design documents and system implementation process
- Identify operations, maintenance, and performance evaluation elements

TARGET AUDIENCE:

Traffic engineering personnel from State, Federal, and local agencies involved in the technical aspects of traffic engineering. The course will not assume any prior knowledge of computers and thus will describe the theory of operation and the manner in which it can be applied to traffic signal controls.

FEE: \$400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bud Cribbs • (703) 235-0526 • bud.cribbs@fhwa.dot.gov

Technical Information: Pamela Crenshaw • (202) 366-1482 • pam.crenshaw@fhwa.dot.gov



See page 6 in the front of the catalog for course registration information and page 9 for a coordination checklist.

COURSE NUMBER: FHWA-NHI-133028

COURSE TITLE: Traffic Signal Design and Operation

There is a need to understand that the congestion and delays that exist on our streets and roadways can be better managed with a thorough understanding of effective traffic signal timing and optimization. Well-developed, designed, implemented, maintained, and operated traffic signal control projects are essential to this process. Engineering tools are available to design, optimize, analyze, and simulate traffic flow. This course addresses the application of the "Manual of Uniform Traffic Control Devices" (MUTCD) to intersection displays, as well as signal timing, computerized traffic signal systems, control strategies, integrated systems, traffic control simulation, and optimization software. The course is divided into two primary parts: Traffic Signal Timing and Design, and Traffic Signal Systems.

OUTCOMES:

Upon completion of the course, participants will be able to:

- List the steps required to plan, design, and implement a signalized intersection
- Devise an appropriate data collection plan for planning, designing, and operating a signalized intersection
- Perform a warrant analysis using the MUTCD warrants, including local policies
- Design basic phasing of the intersection - which movements will get a separate phase, and how they are numbered
- Calculate signal timing at the design stage for both actuated and coordinated operational strategies, including pedestrian clearance intervals
- Determine location of signal displays
- Select signal-related signs and pavement markings, including turning-movement signs and advance warning signs

TARGET AUDIENCE:

The course is intended for those who will design and operate traffic signals within agencies. Examples of target participants include:

Transportation professionals without previous traffic signal experience, particularly those that might be in charge of traffic signal programs and need a solid introduction to the topic

Recent engineering graduates and engineers moving into traffic signal design and operation from other disciplines

Traffic signal technicians who are responsible for the design or operation of traffic signals

Experience with simple engineering arithmetic is required. Some of the workshops include calculations that can be performed by hand or with a simple hand-held calculator. A few of the subjects are presented using mathematical formulas requiring experience with basic algebra.

Participants should have good skills in converting units, such as kilometers/hour to meters/second and miles/hour to feet/second.

FEE: \$270 Per Participant

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bud Cribbs • (703) 235-0526 • bud.cribbs@fhwa.dot.gov

Technical Information: Pamela Crenshaw • (202) 366-1482 • pam.crenshaw@fhwa.dot.gov

COURSE NUMBER: FHWA-NHI-133048 (1-Day)
FHWA-NHI-133048A (2-Day)

COURSE TITLE: Managing Traffic Incident and Roadway Emergencies

This course is part of the core ITS curriculum established by the ITS Professional Capacity Building (PCB) program. For more information on the core curriculum, go to www.pcb.its.dot.gov/Catalogs/ITSCurriculum.htm#section2. This course addresses institutional and technical aspects of safe and efficient resolutions of traffic incidents and other roadway emergencies. The course focuses on practices to obtain good interagency and interdisciplinary understanding and cooperation.

OUTCOMES:

Upon completion of the course, participants will be able to:

- Recognize the program elements needed for a formalized multiagency program to manage traffic incidents and roadway emergencies
- Formulate techniques for effective onsite management of incidents
- Identify technological solutions to facilitate the management of incidents
- Develop a short-term list of 'next step' actions to improve multiagency response to both major and minor traffic incidents

TARGET AUDIENCE:

Persons at mid- or upper-management levels in various agencies who direct the resources of their agencies at the scene of a traffic incident or in response to an incident. Agencies that should be represented at workshops include law enforcement, fire and rescue (including emergency medical), emergency communications, transportation (including traffic management and highway maintenance), planning, towing and recovery, traffic reporting media, hazardous materials contractors, and other emergency management personnel responding to traffic emergencies on freeways and arterial streets.

FEE: \$4,500 Per Course (FHWA-NHI-133048)

LENGTH: 1.0 Days (CEU: 0.6 Units)

FEE: \$6,900 Per Course (FHWA-NHI-133048A)

LENGTH: 2.0 Days (CEU: 1.2 Units)

CLASS SIZE: Minimum: 20; Maximum: 35

NHI Training Program Manager: Bud Cribbs • (703) 235-0526 • bud.cribbs@fhwa.dot.gov

Technical Information: David Helman • (202) 366-8042 • david.helman@fhwa.dot.gov



This course can be taught in different course length formats. See our Web site for details on each course length.

COURSE NUMBER: FHWA-NHI-133075 (2-Day)
FHWA-NHI-133075A (3-Day)



COURSE TITLE: Freeway Traffic Operations

The purpose of the Freeway Management and Operations training course is to provide participants with an appreciation of the key policies, institutional issues, challenges and barriers, technical and other issues to consider in the planning, design, implementation, management, operation, evaluation, and marketing of freeway facilities. The course is divided into 19 sessions, based on the information presented in the new "Freeway Management and Operations Handbook." The course may be conducted in either a 3- or a 2-day format as determined by the local training coordinator.

OUTCOMES:

Upon completion of the course, participants will be able to:

- Identify the types and causes of congestion on freeway facilities
- Compare the potential to improve traffic flow between roadway improvements vs. shorter-term/lower-cost operational improvements on freeway facilities
- Describe the range of ramp management and control strategies and the conditions under which they might be warranted
- Describe the range of lane management and control strategies and the conditions under which they might be warranted
- List strategies for mitigating the impacts associated with planned special events
- Identify the range of functions and elements of a transportation management system
- List detection and surveillance techniques used to support freeway management and operations activities

TARGET AUDIENCE:

Federal, State, and local transportation professionals involved in planning, design, and implementation of freeway improvement projects and the day-to-day management of travel and control of traffic on freeway facilities.

FEE: \$270 Per Participant (FHWA-NHI-133075)

LENGTH: 2.0 Days (CEU: 1.2 Units)

FEE: \$400 Per Participant (FHWA-NHI-133075A)

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bud Cribbs • (703) 235-0526 • bud.cribbs@fhwa.dot.gov

Technical Information: Jessie Yung • (202) 366-4672 • jessie.yung@fhwa.dot.gov



This course can be taught in different course length formats. See our Web site for details on each course length.

COURSE NUMBER: FHWA-NHI-133078**COURSE TITLE:** Access Management, Location and Design

This course covers access management along streets and highways. General benefits as well as the social, economic, political and legal implications of access control are examined. Existing access management practices and policies from States and jurisdictions are used as examples of what types of programs have been implemented and how effective they have been. Through indepth discussion, access management techniques and the warrants for their use are reviewed. Guidelines for design and application of these access management techniques are described in detail. Strategies for developing and implementing retrofit programs to improve existing access control are presented. The course presents several "before" and "after" case studies, which show the impacts of retrofit programs on local businesses. Techniques and procedures for evaluating the impacts of access control on the safety and operations of the highway system are also covered.

OUTCOMES:

Upon completion of the course, participants will be able to:

- Recognize the various elements involved in planning, developing, implementing, and administering an effective access management program
- Assess the safety and operational impacts of alternative access management techniques
- Demonstrate convincingly the merits of obtaining and maintaining good access management along streets and highways

TARGET AUDIENCE:

This course is designed for Federal, State, and local planners and engineers who are currently involved or expect to be involved in decisions on, and/or design of, access to existing or new sites.

FEE: \$400 Per Participant

LENGTH: 3.0 Days (CEU: 1.8 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bud Cribbs • (703) 235-0526 • bud.cribbs@fhwa.dot.gov

Technical Information: Neil Spiller • (202) 366-2188 • neil.spiller@fhwa.dot.gov

Got questions?
Contact the NHI Training Team for more information.



COURSE NUMBER: FHWA-NHI-133098
COURSE TITLE: Advancing Transportation Systems
Management and Operations



The transportation challenges of the 21st century require a significant cultural shift in the way transportation systems are managed and operated. This means moving from limited interactions between planners and operators to a solid linkage that facilitates data sharing, joint development of regional operations opportunities, resource sharing, and supportive institutional arrangements.

From an operations perspective, this cultural shift requires anticipating user needs 24/7, focusing on customers, and changing policies and procedures to be performance-based. To be successful, the new norm requires a cross-jurisdictional, multiagency, and multimodal perspective. From a planning standpoint, this cultural shift means bringing "operations thinking" into the planning process. Smart planning requires that ongoing operations be considered in regional planning and investment decisions.

This course provides an understanding of Transportation Systems Management and Operations (TSM&O) in a regional context. It explores 21st century transportation challenges and how to advance TSM&O through a cultural shift in operations and planning. Throughout this course, collaboration and coordination among transportation professionals and related stakeholders are emphasized as key components to reshaping the culture and enabling the advancement of TSM&O. A five-part framework for collaboration and coordination is described to assist transportation professionals and related stakeholders in working together in a meaningful and sustained way.

NOTE: There is a 2-hour Executive Summary Seminar available to State and local elected and appointed officials. Please contact your FHWA Division office for more information about this seminar.

OUTCOMES:

Upon completion of the course, participants will be able to:

- State the importance of a regional perspective in TSM&O
- Describe the cultural shift needed among operators, planners, and decision makers to affect TSM&O
- Identify the opportunities to link planning and operations
- Formulate a Regional Concept for Transportation Operations
- Describe a framework for enabling the advancement of TSM&O

TARGET AUDIENCE:

This 1-day course is intended for anyone who has an interest in transportation planning and operations, including those responsible for making day-to-day decisions on transportation management and operations within their respective organizations. The target audience includes transportation managers, service providers, public safety officials, public works directors, and business sector members of chambers of commerce. It also includes both operators and planners from States, cities, and counties, as well as MPOs and other authorities and agencies. A mixed audience is extremely important to this course, as the idea of regional TSM&O requires a significant cultural shift from today's practice. While there are no academic/training prerequisites for participation in this course, familiarity with regional transportation planning, operations, and ITS initiatives is helpful.

FEE: \$200 Per Participant

LENGTH: 1.0 Days (CEU: 0.6 Units)

CLASS SIZE: Minimum: 20; Maximum: 30

NHI Training Program Manager: Bud Cribbs • (703) 235-0526 • bud.cribbs@fhwa.dot.gov

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